Composition and Toxicity of Biodiesel versus Conventional Diesel

Michael C. Madden and M. Ian Gilmour, US EPA National Health and Environmental Effects Research Laboratory, Chapel Hill and Research Triangle Park, NC

Increasing production of biodiesel (BD) fuel at the local, national, and global levels raise important issues related to the impact and potential adverse health outcome related to BD exposures. Studies on the toxicity of BD combustion emissions are very limited. Emission components may change in an unpredictable fashion, which in part are dependent on the blend (% biodiesel in petroleum diesel (PD)) and other factors such as the BD feedstock and production process. This presentation will discuss several approaches applied to examine BD emission toxicity using examples from various modeling, in vitro, and in vivo studies. Findings from our labs (in vitro and in vivo BD exposure studies) with cultured cells (lung, vascular) and non-human animal models, will compare the varied biological (lung, vascular, immune, and cardiac endpoints) responses compared to PD emission exposure responses. Other toxicity issues related to the exposure to biofuels and BD in particular will also be discussed. [This is an abstract of a proposed presentation and may not reflect official U.S. EPA policy].